

**PROGRAMMATIC
INITIAL ENVIRONMENTAL EXAMINATION (PIEE) May 22 DRAFT**

PROGRAM/ACTIVITY DATA:

Country/Region: Global (GH, AFR, ANE, E&E, LAC, DCHA and EGAT).

Program/Activity Title: Global USAID Response to Avian Influenza Outbreak

Funding Begin: FY06 **Funding End:** NA **LOP Amount:** \$ NA
Sub-Activity Amount: \$ NA

IEE Prepared By: Rochelle Rainey/GH (based on AFR Bureau version by Alan Schroeder)

IEE Amendment (Y/N): N

Current Date: xxxx

ENVIRONMENTAL ACTION RECOMMENDED: (Place X where applicable)

Categorical Exclusion: Negative Determination: X
Positive Determination: Deferral:

ADDITIONAL ELEMENTS: (Place X where applicable)

CONDITIONS X PVO/NGO:

SUMMARY OF FINDINGS:

This Programmatic Initial Environmental Examination (PIEE) provides a screening-level environmental examination of the actions USAID anticipates taking globally in response to the ongoing outbreak of the H5N1 subtype of the Influenza A virus, commonly known as “avian influenza (AI)”. This PIEE is intended to help fulfill the environmental review requirements of the U.S. Agency for International Development’s (USAID’s) environmental regulations, found in 22CFR216.

The nature of USAID’s involvement in the global AI response can be expected to evolve, and to do so rapidly. This PIEE attempts to anticipate all or most of the types of activities USAID might engage in as part of this response, to provide an environmental examination and threshold decision for these potential actions, and to identify appropriate mitigating measures and best practices to employ.

Because the Agency’s internal policy (ADS 204) requires environmental examinations at the level of the operating unit that has managerial responsibility for an activity, this PIEE must be supplemented by brief country-level IEEs or IEE amendments to the implementing Strategic Objectives covering the AI response activities to be supported. It is the intent of this PIEE to provide guidance to which such country-level IEEs can simply refer, rather than repeat. Such country-level IEEs will acknowledge the guidance in this PIEE, assign environmental mitigation responsibilities to those parties responsible

for the management of country-level AI activities, and address any proposed discrepancies with PIEE guidance.

Following is a summary of the recommended threshold determinations for the categories of AI response activities:

Monitoring and surveillance (M & S) for the presence of avian influenza in wild and domestic animals, as well as humans. This category of activity is recommended for a **Negative Determination with Conditions**, per 22CFR216.3(a)(2)(iii) because of disease transmission and associated risks from these activities. The conditions to follow for this category of activities are spelled out in Section 3.1 of this document.

Disinfection of workers, clothing, shoes/boots, poultry houses, vehicles, tools, medical equipment, culling equipment, and all other equipment and materials which come into contact with the virus or products containing the virus. This category of activity is recommended for a **Negative Determination with Conditions**, per 22CFR216.3(a)(2)(iii). The conditions to follow for this category of activities are spelled out in Section 3.2 of this document.

USAID programs should use a three-stage process for determining the suitability of a pesticide with respect to its registration status:

1. If the product is among the 100 currently registered by USEPA for avian influenza, then the program may use the product, so long as they have approval from the appropriate host government authorities;
2. If the product is identical in formulation to one of the products on the list above, then the program may use that product, so long as the program can demonstrate that none of the 100 EPA-approved pesticides are available in the country, the product does not infringe on any patents, it can be shown to meet required quality control to be fully effective and not contain harmful contaminants, and the program has approval from the appropriate host government authorities. If in doubt, the operating unit should contact the REA and BEO for approval.
3. If the product in question is not on the EPA-approved list, and is not identical in formulation to any products on that list, then the operating unit should directly contact the REA and BEO to seek approval prior to use of the product in question. The mission should assemble all the information they can about the product in question, preferably including a product label. Among other requirements, the program must demonstrate that none of the 100 EPA-approved pesticides are available in the country, that the product meets required quality control to be fully effective and not contain harmful contaminants, and that the program has approval from the appropriate host government authorities.

Disinfectants are defined by the EPA as a class of pesticides that are used to destroy or inactivate infectious fungi and bacteria, but not necessarily their spores. There is a list of 31 exempted disinfectants that are not considered by the EPA to be public health or

environmental risks (<http://www.epa.gov/docs/fedrgstr/EPA-PEST/1996/March/Day-06/pr-577.html>). When any non-exempt pesticide disinfectants are needed, the environmental examination required for approval of their use must fulfill all analytical elements required by 22CFR216.3(b), USAID's Pesticide Procedures. To the extent possible, those analytical elements which are not specific to a country or to a disinfectant product are addressed in Section 3 of this document, and need not be repeated in country-level examinations. The identity of those elements which must be addressed in country-level examinations, and the manner of the analysis needed in each case is also specified in Section 3 of this document.

Animal and human vaccination, veterinary examination and treatment, and human patient examination and treatment. This category of activities is recommended for a **Negative Determination with Conditions**, per 22CFR216.3(a)(2)(iii), because of disease transmission risks from medical waste generated by these activities, and because of the potential for disease transmission to medical and veterinary workers and for retransmission by infected medical and veterinary workers. The conditions to follow for this category of activities are spelled out in Section 3.3 of this document.

Culling of diseased livestock and disposal of diseased livestock, wild birds, and their manure. This category of activities is recommended for a **Negative Determination with Conditions**, per 22CFR216.3(a)(2)(iii), because of disease transmission risks from inappropriately conducting these activities. The conditions to follow for this category of activities are spelled out in Section 3.4 of this document. This type of activity does not include extermination of uninfected wild bird populations or their natural habitats or similar extreme measures that would require a Positive Determination, Scoping Exercise, and Environmental Assessment, unless U.S. migratory species are involved in which case an Environmental Impact Statement under NEPA procedures would be required.

Provision and training in the use of personal protective equipment (PPE). This category of activities is recommended for a **Negative Determination with Conditions**, per 22CFR216.3(a)(2)(iii). The conditions to follow for this category of activities relate to the proper selection of and training in the use of PPE, as detailed in Section 3.5 of this document.

Communication, public awareness campaigns and training in avian influenza response. This category of activities is recommended for A **categorical exclusion from environmental examination**, per 22CFR216.2(c)(2)(i) [education, technical assistance, training].

As required by ADS 204.5.4, the relevant Strategic Objective (SO) team in each country where AI response activities are undertaken must actively monitor ongoing activities for compliance with approved IEE recommendations, and modify or end activities that are not in compliance. The SO team must also ensure that provisions of the IEE concerning mitigative measures and the conditions specified herein, along with the requirement to monitor, are incorporated into associated contracts, cooperative agreements, grants and sub-grants.

APPROVAL OF ENVIRONMENTAL ACTION RECOMMENDED:

CLEARANCE:

Global Health Bureau Environmental Officer

_____ Date: _____

Michael Zeilinger

Filename: Agency AI IEE.doc

ADDITIONAL CLEARANCES:

Africa Bureau Environmental Officer

_____ Date: _____

Brian Hirsch

Asia/Near East Bureau Environmental Officer

_____ Date: _____

John O. Wilson

Democracy, Conflict and Humanitarian Assistance Bureau Environmental Officer

_____ Date: _____

Economic Growth, Agriculture and Trade Bureau Environmental Officer

_____ Date: _____

Jim Hester

Europe and Eurasia Bureau Environmental Officer

_____ Date: _____

Mohammad Latif

Latin America and Caribbean Bureau Environmental Officer

_____ Date: _____

Victor Bullen

OPTIONAL CLEARANCES:

General Counsel _____ Date: _____

Chris Ryder

PROGRAMMATIC INITIAL ENVIRONMENTAL EXAMINATION (PIEE)

PROGRAM/ACTIVITY DATA:

Country/Region: Global (GH, AFR, ANE, E&E, LAC, DCHA and EGAT)

Program/Activity Title: Global USAID Response to Avian Influenza Outbreak

1.0 BACKGROUND AND ACTIVITY/PROGRAM DESCRIPTION

1.1 Purpose and Scope of PIEE

This Programmatic Initial Environmental Examination (PIEE) provides a screening-level environmental examination of the actions USAID anticipates taking across the Africa region in response to the outbreak of the H5N1 subtype of the Influenza A virus, commonly known as “avian influenza (AI).” This PIEE is intended to help fulfill the environmental review requirements of the U.S. Agency for International Development’s (USAID’s) environmental regulations, found in 22CFR216.

The nature of USAID’s involvement in the regional AI response can be expected to evolve, and to do so rapidly. This PIEE attempts to anticipate most, if not all, of the types of activities USAID might engage in as part of this response, provide an environmental examination and threshold decision for these actions, and identify appropriate mitigating measures and best practices.

Because the Agency’s internal policy (ADS 204) requires environmental examinations at the level of the operating unit that has managerial responsibility for an activity, this PIEE must be supplemented by brief country-level IEEs or IEE amendments covering the AI response activities to be supported. It is the intent of this PIEE to provide guidance to which such country-level IEEs can simply refer, rather than repeat. Such country-level IEEs will serve to acknowledge the guidance in this PIEE, assign environmental mitigation responsibilities to those parties responsible for the management of country-level AI activities, and address any proposed discrepancies with PIEE guidance.

1.2 Background

Avian Influenza (AI) virus can be serially transmitted between and among wild and domestic bird populations and can decimate domestic production and harm trade. Migrating wild birds may transfer AI long distances and across international borders, and are one source of the current outbreaks. Another source is the movement of infected birds in the commercial trade, both caged wild birds and poultry. The AI virus may also be transmitted to humans by direct contact with infected birds, body parts and waste, leading to sickness and potential death. The worst-case scenario is that the virus may mutate to become able to be transmitted from human to human, leading to an epidemic or pandemic.

USAID has classified countries into five levels of risk for avian influenza (http://www.usaid.gov/our_work/global_health/home/News/news_items/avian_influenza.html):

1. Endemic, characterized by widespread and recurring H5N1 infections in animals since Dec 2003 – South Asia, East Asia, and parts of South –East Asia
2. Epidemic, with isolated H5N1 outbreaks in animals since July 2005 – China, India, Europe, Nigeria and proximal countries in West Africa
3. High Risk, countries proximal to endemic or epidemic countries, or at risk of animal outbreaks due to bird migration and/or transport of birds – Africa, except for southern Africa
4. At-Risk due to bird migration and/or transport of birds – southern Africa
5. Pandemic risk, at lower risk of animal outbreaks, but would be affected by a human pandemic – North, Central and South America.

In the spring of 2006, European researchers investigating returning migratory birds from Africa found no avian influenza virus, indicating that this route of transmission is less important than originally believed. Globally, the most important route of spread remains unrestricted poultry movements

(http://www.birdlife.org/action/science/species/avian_flu/)

WHO reports on the cumulative number of laboratory-confirmed human cases and deaths from avian influenza. See http://www.who.int/csr/disease/avian_influenza/country/cases_table_2006_05_12/en/index.html

USAID Health's response to AI is found at the following web address: http://www.usaid.gov/our_work/global_health/home/News/news_items/avian_influenza.html. See <http://www.irinnews.org/Avianflu.asp> for a list of African and Asian countries and what each is doing to prepare itself against/for outbreak.

For more information on migration and the potential for spread of AI see: http://www.fao.org/AG/AGAINFO/subjects/en/health/diseases-cards/special_avian.html.

The primary goal at present is to exclude or contain the spread of the AI virus, eliminate it wherever it is found and prevent the spread to humans, which may lead to mutation to human transmissibility. USAID's current plan to assist is listed briefly below under section 1.3.

Specific regional issues related to avian influenza are described below:

Africa

There are two major migration routes for migratory birds coming to Africa to over winter. The Black Sea/Mediterranean Flyway passes from southern Spain along the coast of West Africa through coastal Morocco, Mauritania, and Senegal and then inland across

the major water basins in West Africa, including the Senegal River Basin, leading to the Niger River Basin, the Volta Basin, and finally the Chad Lake Basin. The other flyway follows the Nile Rivers into Egypt, Sudan, Ethiopia, Uganda, Eastern Congo, Kenya and northern Tanzania, where it merges with the flyway that crosses the Sahel. The countries with the highest risk then are these countries that contact the Nile as well as Senegal, The Gambia, Mali, Burkina Faso, Niger, northern Nigeria, northern Cameroon, and Chad.

These water basins form ideal nesting and rest areas for migratory birds and it is believed that these basins could represent the areas of first introduction of the virus into the African continent. West Africa is a major wintering area for many non-passerines, including considerable numbers of some Palearctic duck species, several species of shorebirds and some birds of prey, as well as passerines (song birds). Passerines favor the dry savannah zones, whereas the non-passerines favor the wetlands and large water basins. Large populations of waterfowl such as Northern Pintail ducks and Garganey ducks (a small European duck having a conspicuous white stripe over each eye and down the back of the head in the male) winter there. The populations of Garganeys and Northern Pintails are 2 million and 500 thousand birds respectively.

The inland lowlands with rich soils near wetlands represent approximately 50 percent of the agriculturally available area in West Africa and contain dense human populations. Over wintering birds in Africa's wetlands, rivers, and shorelines may transmit the disease to local wild birds, and from there to domestic poultry, or directly to poultry where the two mix. Farmers grow their crop at the receding water edge at reservoirs, rivers or lakes during the dry season, allowing domestic poultry to roam freely around field crops, houses and the surrounding vegetation. Most people in these areas are poor and are not likely to dispose of dead poultry even if they are diseased, as they represent not only a source of protein but also a source of income.

Regional trade in diseased poultry forms another source of inoculum and is apparently the source of the disease outbreak in West Africa.

At present, the AI virus has been found in seven African countries, Egypt, Sudan, Nigeria, Niger, Burkina Faso, Cameroon, and Djibouti, and is expected to move to other countries across Africa.

Appreciate any input from the Bureaus on this (except Africa's!) – Erika and Carl, is OFDA mobilizing a response for AI? If so, feel free to add a general para on your approach.

Asia/Near East (http://www.birdlife.org/action/science/species/avian_flu/) The first outbreaks of the highly pathogenic version of avian influenza were reported in Asia in 2003. 99 of the 115 human deaths from avian influenza up to May 2006 have been from five countries in Asia (Vietnam, Indonesia, Thailand, China, and Cambodia, http://www.who.int/csr/disease/avian_influenza/country/cases_table_2006_05_12/en/index.html) Like in Africa, many smallholders raise chickens or ducks as a source of income and as meat for feasts. Detection and control in these areas will be difficult.

Most outbreaks in south-east Asia can be linked to movements of poultry and poultry products (or accidental transfer of infected material from poultry farms, such as water, straw or soil on vehicles, clothes and shoes). Prior to April 2005, wild birds found dead or dying with H5N1 in Asia were largely sedentary species that scavenge near poultry, live markets or captive bird populations. The lack of a trail of H5N1 infections along migratory pathways from infected breeding habitats in Mongolia, China and Russia to southern wintering areas in Asia suggests that migratory wild birds are not spreading the disease long distances between continents. With few exceptions, there is limited correlation between the pattern and timing of spread among domestic birds and wild bird migrations. http://www.birdlife.org/action/science/species/avian_flu/.

Europe and Eurasia

In the spring of 2006, European researchers investigating returning migratory birds from Africa found no avian influenza virus, indicating that this route of transmission is less important than originally believed.

Latin America/Caribbean

While it is possible for the virus to show up in migratory birds in the Americas, according to Robert Webster, historically there is little crossover of flu viruses between American and European migratory birds. USAID places the LAC region in the pandemic risk category, where they would be affected by human-human transmitted disease, but not at risk from migratory flocks.

1.3 Description of Activities

Laboratory Capacity Building:

- Training lab technicians to identify bird influenza;
- Procurement of essential equipment and supplies (including reagents, mobile Patient Care Reports (PCRs), ELISA readers, antigen kits, high security lab gear, Vertical Laminar Air Flow Hood High security Freeze, and Viroligique Diagnostic Kits); and
- Establishing and implementing lab quality assurance procedures.
- Biohazard handling procedures

Strengthening Surveillance Systems

- Working with the U.N. Food and Agriculture Organization (FAO) and Ministries of Agriculture/Rural Development/Livestock/Environment and Sanitation to strengthen wild/migratory bird surveillance, including:
 - o Procurement of equipment (laptops, Geographic Information Systems (GIS) equipment, etc.) and supplies for animal surveillance and proper handling of dead birds; and
 - o Training to properly identify sick birds and use established referral mechanisms for dead bird and sample transport.

- Working with Ministries of Health to build on existing human and animal surveillance systems, including existing Integrated Disease Surveillance and Response systems and health facilities.
- Enhance country-level ability to collect and test animal and livestock samples by providing training and necessary supplies.
- Support National Avian Influenza Task Forces to develop animal and human surveillance and rapid response teams at national and district levels, including training border officials to strengthen cross-border surveillance.

Building Capacity for Human Response

- Working with the World Health Organization (WHO) and Ministries of Health to build capacity for human response, including:
 - o Training health workers (including those working at community levels) to identify potentially infected patients and refer them to the appropriate level of care and contact lab facilities for initial testing; and
 - o Procuring essential equipment and supplies (including personal protective equipment).

Responding to Animal Infections

- Working with Ministries of Agriculture to strengthen response to outbreaks in animals. Activities may include:
 - o Procurement of protective gear for field workers handling dead and infected birds;
 - o Procurement of materials and supplies for animal response, including disinfectants and infection prevention materials and materials and equipment for culling; and
 - o Training for local communities on animal quarantine and household management of domestic poultry.

Communications and Public Awareness

- Mass media campaigns (internet, press, radio, television, posters, flyers);
- Community-based awareness and mobilization campaigns;
- Development and use of communications, including informational, educational, and behavior-change materials;
- Risk communications through Information, Education and Communication materials, radio spots, print media advertisements, etc.

2.0 COUNTRY AND ENVIRONMENTAL INFORMATION (BASELINE INFORMATION)

2.1 Locations Affected

All USAID countries have various sizes of extensively and widely scattered populations of domestic poultry that are raised for income, meat and eggs by most rural and many urban peoples. All of these are susceptible to infection by AI. Many species of migratory birds coming to Africa from Europe, the Middle East and Asia are thought to be susceptible. According to the World Organization for Animal Health, as of May 18, 2006, 54 countries had reported outbreaks of H5N1 avian influenza virus (http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm).

2.2 National [or applicable] Environmental Policies and Procedures [of host country both for environmental assessment and pertaining to the sector]

A current succinct listing of policies from African, Asian and Middle Eastern countries preparing themselves to exclude, detect, contain and deal with AI can be found at this United Nations web address: <http://www.irinnews.org/Avianflu.asp>. Country environmental assessment capabilities will need to be assessed through individual country-specific IEEs.

For individual USAID country missions that write country-specific IEEs for dealing with AI, this section (2.2) is critical and should briefly assess the current physical environment that might be affected by the activities in individual country IEEs. Depending upon the activities proposed, this *could* include an examination of land use, geology, topography, soil, climate, groundwater resources, surface water resources, terrestrial communities, aquatic communities, environmentally sensitive areas (e.g., wetlands or protected species), agricultural cropping patterns and practices, infrastructure and transport services, air quality, demography (including population trends/projections), cultural resources, and the social and economic characteristics of the target communities. This analysis should also draw on the Country Strategy and supportive analysis (such as the Environmental Threats and Opportunities Assessment, and Conflict Vulnerability Assessment). Finally, indicate the status and applicability of host country, Mission Country Strategy Statement, and other policies, programs and procedures in addressing natural resources, the environment, food security, and other related issues.

One approach that will expedite this process is to refer to earlier IEE's write-up for this Section, as long as it is in the same strategy period, and reasonably recent and relevant (less than 3-5 years old). If one uses this approach, for example, the country-specific IEE wording could be something like, "see the IEE for SO1 -- Increased rule of law and transparency in governance, 27rwand4.iee, at <http://www.afr-sd.org/documents/iee/docs/27rwand4.doc>". For missions in Africa, the [BEO Actions Tracker](#) is also a reliable resource for IEE language, typically kept current within at least six months. Further, AFR Bureau has access to consultants who can quickly be fielded to

research and write an IEE or IEE amendment for AI, if needed (do other bureaus have access to consultants who could do this too?).

Resources for understanding and dealing with reducing waste (especially plastic) generation through “*green procurement*” or “*Environmentally Preferable Purchasing, or EPP*” can be found at: www.epa.gov/oppt/epp. Resources for understanding and dealing with “*rapid environmental impact assessment in disaster response*” can be found at: http://www.benfieldhrc.org/disaster_studies/rea/rea_index.htm and <http://www.reliefweb.int/rw/lib.nsf/db900SID/DPAL-5ZAHW2?OpenDocument>.

3.0 EVALUATION OF ACTIVITIES FOR ENVIRONMENTAL IMPACT POTENTIAL RECOMMENDED THRESHOLD DECISIONS and MITIGATION ACTIONS (INCLUDING MONITORING AND EVALUATION)

3.1 Monitoring and surveillance (M & S) for the presence of avian influenza in wild and domestic animals, as well as humans.

The main environmental concern regarding monitoring and surveillance activities is the potential to inadvertently transmit avian influenza between monitored locations.

Monitoring and surveillance (M & S) personnel, medical personnel, and animal health officials visiting potentially affected premises should be extremely conscientious that they, through their work in surveillance and epidemiological investigations or vaccination initiatives, could actually be infection and disease spreaders.

The biggest danger is bird droppings or manure. The AI virus likes moist, dirty conditions so it is essential to thoroughly disinfect items that have been in contact with bird droppings, including shoes, clothes before working with poultry/entry to a place where poultry are kept, cages, bird processing or culling equipment. M & S personnel will need to reduce exposure to and transfer of bird manure from place to place.

Threshold Decision: A **negative determination (with conditions)** is recommended for support to AI Monitoring and Surveillance activities per 22CFR216.3(a)(2)(iii).

Conditions:

1. Through communications and training, ensure that M & S personnel be extremely conscientious that they, through their work in surveillance and epidemiological investigations or vaccination initiatives, could actually be infection and disease spreaders;
2. Provide personal protective equipment and clothes to those that visit the flock or home, including boots for walking through bird manure, gloves for handling birds or people, and masks;
3. Provide portable baths with disinfectant for boots and vehicle tires (use a pre-disinfectant bath to wash off the organic matter before entering disinfectant);
4. Ensure that M & S personnel clean and disinfect equipment, personal protection equipment, tools, and instrumentation;
5. M & S workers should not purchase or transport live or processed birds for food while at work.
6. Ensure that M & S workers properly dispose of used or disposable gloves and masks and other protective clothing and equipment.

Discussion and Information Resources:

For more discussion on potential risks of transmission by M & S personnel and others, see: http://www.fao.org/ag/AGInfo/subjects/en/health/diseases-cards/avian_qa.html#7.

3.2 Disinfection of poultry workers, clothing, shoes/boots, poultry houses, vehicles, tools, medical equipment, culling equipment, and all other equipment and materials which come into contact with the virus or products containing the virus.

The environmental issue of concern from disinfection activities is the potential for toxic effects on humans and non-target organisms from exposure to disinfection products. Many of these chemicals are acutely toxic to people in sufficiently high concentrations and can be toxic to the environment in sufficient quantities.

Disinfectants are defined by the EPA as a class of pesticides that are used to destroy or inactivate infectious fungi and bacteria, but not necessarily their spores. There is a list of 31 exempted disinfectants that are not considered by the EPA to be public health or environmental risks (www.epa.gov/docs/fedrgstr/EPA-PEST/1996/March/Day-06/pr-577.html). When any non-exempt pesticide disinfectants are proposed, the environmental examination required for approval of their use must fulfill all analytical elements required by 22CFR216.3(b), USAID's Pesticide Procedures. (http://www.epa.gov/pesticides/about/index.htm#what_pesticide)

Risks from human exposure to disinfectants include acute poisoning of children who inadvertently come into contact with or ingest the chemicals, people transporting the chemicals in bulk from the port of entry to the storage facility, transport from the storage facility to the point of use, people who mix the chemicals, people who apply the chemicals, people coming into contact with the applied chemicals through meat, eggs, proximity, or ground water contamination, and export meat and egg market certifiers who may be concerned about residues. The AI virus may also become resistant to some disinfectants, possibly leading to the need for rotation of disinfectant products and active ingredients.

Disinfectants can cause harm to aquatic organisms if dumped into waterways and lakes and will disrupt microbial processes in waste treatment facilities. Bulk quantities that are inadvertently spilled may kill all exposed organisms.

Currently, little or no management of disinfectants typically occurs in small-scale facilities in countries where USAID works. Training and supplies are minimal. The quality of the products being sold in developing countries may be in question and require testing for presence and amount of active ingredient(s). Clearly there is a strong precedent for use of safety procedures, training and equipment to reduce human exposure to disinfectants and residues, and properly dispose of them. Individual country IEEs will address these risk issues and missions will devote resources to their mitigation.

Threshold Decision: A **negative determination (with conditions)** is recommended for support to AI disinfection activities per 22CFR216.3(a)(2)(iii).

Pesticide Procedures Analysis for AI Disinfection Products (including conditions):

USAID programs should use a three-stage process for determining the suitability of a pesticide with respect to its registration status:

1. If the product is among the 100 currently registered by USEPA for avian influenza, then the program may use the product, so long as they have approval from the appropriate host government authorities;
2. If the product is identical in formulation to one of the products on the list above, then the program may use that product, so long as the program can demonstrate that none of the 100 EPA-approved pesticides are available in the country, the product does not infringe on any patents, it can be shown to meet required quality control to be fully effective and not contain harmful contaminants, and the program has approval from the appropriate host government authorities. If in doubt, the operating unit should contact the REA and BEO for approval.
3. If the product in question is not on the EPA-approved list, and is not identical in formulation to any products on that list, then the operating unit should directly contact the REA and BEO to seek approval prior to use of the product in question. The mission should assemble all the information they can about the product in question, preferably including a product label. Among other requirements, the program must demonstrate that none of the 100 EPA-approved pesticides are available in the country, that the product meets required quality control to be fully effective and not contain harmful contaminants, and that the program has approval from the appropriate host government authorities.

Disinfectants are defined by the EPA as a class of pesticides that are used to destroy or inactivate infectious fungi and bacteria, but not necessarily their spores. There is a list of 31 exempted disinfectants that are not considered by the EPA to be public health or environmental risks (<http://www.epa.gov/docs/fedrgstr/EPA-PEST/1996/March/Day-06/pr-577.html>). When any non-exempt pesticide disinfectants are needed, the environmental examination required for approval of their use must fulfill all analytical elements required by 22CFR216.3(b), USAID's Pesticide Procedures.

To the extent possible, those analytical elements which are not specific to a country or to a disinfectant product are addressed in below of this document, and need not be repeated in country-level examinations. The identity of those elements which must be addressed in country-level examinations, and the manner of the analysis needed in each case is also specified. Also identified within this section is additional information and analysis which might be needed in support of supplemental IEEs for country-level programs.

PESTICIDE PROCEDURES ANALYSIS FOR AI DISINFECTANTS

Pesticide procedures element a: USEPA registration status of the proposed pesticide

Intent: Pesticides are registered in the U.S. by active ingredient and by formulation. “Registration status” possibilities of the active ingredients and the formulated products include active registration, never registered, and cancelled. USAID is effectively limited to using pesticides registered in the U.S. by the U.S. Environmental Protection Agency for the same *or similar* uses. Other pesticides not registered in the U.S. may be authorized, but only if the USAID program can show that no alternatives are available, as required under USAID Pest Management Guidelines for the use on non-U.S. registered pesticides.

Cost and ready availability of an unregistered pesticide is not sufficient reason not to use an EPA registered one. If an unregistered pesticide is required, it must first be shown to be as safe and effective as the EPA registered ones are. This is accomplished through an Environmental Assessment that must be approved by the Bureau Environmental Officer. Given that EPA has approved 100 different disinfectant pesticides made by a number of different companies for AI, it is unlikely that none of these would be available in a given country. Host country pesticide (and disinfectant) registration procedures must also be identified and followed, if they exist.

EPA’s list of 100 disinfectant pesticide products registered for use against Avian Influenza virus in the USA is found at: http://www.epa.gov/pesticides/factsheets/avian_flu_products.htm. As EPA states on this site, “Although there are no antimicrobial products registered specifically against the H5N1 subtype of **avian influenza A** viruses, EPA believes that the currently registered **avian influenza A** products, when applied in strict accordance with the label directions, will be effective against the H5N1 strain.” See http://www.fao.org/ag/AGInfo/subjects/en/health/diseases-cards/avian_qa.html#7 for a list of FAO-recommended products and practices.

The relevant Bureau Environmental Officer will use a three-stage process for determining the suitability of a pesticide with respect to its registration status:

1. **If the product is among the 100 currently registered by USEPA for avian influenza**, then Africa Bureau programs may use the product, so long as they have approval from the appropriate host government authorities;
2. **If the product is identical in formulation to one of the products on the list** above, then Africa Bureau programs may consider its use, so long as an amendment to this IEE can show that none of the 100 EPA approved pesticides are available in the country, it does not infringe on any patents, it can be shown to meet required quality control to be fully effective and not contain harmful contaminants, and they have approval from the appropriate host government authorities. Prior to seeking to use such a product, the operating unit should directly contact the REA and BEO to discuss the need to use of the unregistered product in question. The mission should assemble all the information they can

about the product in question, preferably including a product label. The registration and/or approval status by the host government must be known.

3. **For any other disinfection product (those neither on EPA list nor with an identical formulation to an EPA approved disinfectant)**, prior to seeking to use a product the operating unit should directly contact the REA and BEO to discuss the need to use of the unregistered product in question. The mission should assemble all the information they can about the product in question, preferably including a product label. The registration and/or approval status by the host government must be known.

Pesticide procedures element b: Basis for selection of the pesticide

The main factors likely to be used in the selection of EPA approved disinfectants in USAID programs include availability, efficacy (effectiveness at killing the virus), and price. Other factors to consider include relative safety to human health and quality control considerations, such as the reliability of the manufacturer.

Some products will likely be imported from major international firms like DuPont, Dow, and others; some will be imported from third countries like India, China, South Africa and others; while still other products may be produced locally or regionally. Some products will be produced locally or third countries under license from the major companies. South Africa has a strong chemicals production and distribution industry and produces many products under contract or license agreement, and distributes others.

The issues of greatest concern on choice of manufacturer will be the presence and quantity of active ingredient; that is, does the container contain what it claims on the label in the same concentrations or concentration ranges? Depending upon the manufacturer as well as storage conditions and age of the product, it may or may not. If a product does not contain enough of the active ingredient, once diluted, it may not be effective against the AI virus. A second important concern is that if a formulation is proprietary or under patent, that USAID not support the procurement or use of products that are not manufactured by the owner or under a license.

Product quality control is confirmed in most countries by taking random samples of the product imported or to be purchased and tested to determine what is in the container. This is generally done by a government laboratory but could also be contracted out to private sector labs. Most of the disinfectants are inorganic compounds that could be tested by using color-producing reagents and relatively inexpensive colorimetric devices such as Spectrometer 20, or 'Spec 20s'.

Governments, therefore, should be supported in randomly testing disinfectant products to be imported/used against AI.

Pesticide procedures element c: Extent to which the proposed pesticide use is, or could be, part of an Integrated Pest Management (IPM) program:

The international—as well as many national—strategies being implemented to deal with AI already form an integrated program. In addition to control of the AI virus, most initiatives include monitoring and surveillance, zoning and compartmentalization, regulations and quarantine, vaccination, disinfection and disposal of waste (see http://www.oie.int/eng/AVIAN_INFLUENZA/home.htm).

See http://www.encapafrika.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch12-IntegPestMngmt.pdf for further ideas in reinforcing an integrated management program that reduces pesticide use in Africa.

Pesticide procedures element d: Proposed method or methods of application, including the availability of application and safety equipment.

The best information on how to apply the disinfectants safely will be found on the product or container labels. In the USA, EPA requires that all products have labels containing application and safety procedures. For products that are registered in the USA, use the site: <http://oaspub.epa.gov/pestlabl/ppls.home> to see web copies of the labels. Products not registered in the USA are also likely to have labels with the same type of information, as most international standards require.

See http://www.encapafrika.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch13-SaferPesticideUse.pdf to understand pesticide safety issues in Africa.

Pesticide procedures element e: Any acute and long-term toxicological hazards, either human or environmental, associated with the proposed use, and measures available to minimize such hazards:

A list of chemicals for disinfecting different items and risk avoidance is found in tables at: http://www.fao.org/ag/AGInfo/subjects/en/health/diseases-cards/avian_qa.html#7. The disinfectant product on the FAO-recommended list, Virkon, is registered in the USA as both Virkon and Virkon S. The EPA recommends, among others, the use of Virkon S as an AI disinfectant. Both Virkon products come formulated in tablet and powder forms. Both contain a mixture of sodium chloride (salt) and potassium peroxymonosulfate, which are corrosive, and are Class I (Danger) products in the concentrated form. Virkon S contains a 5-10% concentration of sulfuric acid and potassium persulfate.

Use care with handling all forms of Virkon. The Virkon powder in concentrated form is corrosive and can cause skin burns, lung burns and irreversible eye damage so use rubber gloves, full protective clothing, a particle mask, goggles, and avoid breathing the powder.

Below is a table containing selected disinfectant agents, with information on USEPA acute toxicity, issues with human health and environment, as well as mitigating safety measures to avoid harm.

Human and Environmental Toxicity Hazards of Selected Disinfectant Chemicals

Note: Keep all concentrated products away from children. For First Aid with strong irritants, do not induce vomiting. *Most Class I products—once diluted—become much less toxic.* The greatest health risk will be for the person who mixes the concentrate with water. *Also, note that this list is NOT exhaustive.*

Chemical or Product Name	USEPA Toxicity Range for EPA-Registered Products	Human Health	Environment	Safety Measures
Benzalkonium chloride (one of 3 chemicals found in product sold in Nigeria called “Diskol”)	Danger, Class I (as concentrated product)	Strong irritant. May cause skin, eye, lungs, and mucous membrane burns.	Moderately toxic to fish, crustaceans. Highly toxic to zooplankton.	For people who mix the product with water, wear rubber gloves, goggles, mask, and protective clothing. Avoid breathing the dust. Use care around aquatic environments.
Glutaraldehyde (one of 3 chemicals found in product sold in Nigeria labelled Diskol)	Danger, Class I (as concentrated product)	Irritant. May cause cough, skin & eye redness and pain. Ingestion may cause abdominal pain, diarrhea, nausea.	Moderately toxic to zooplankton. Slightly toxic to fish.	For people who mix the product with water, wear rubber gloves, goggles, mask, and protective clothing. Use care around aquatic environments.
Formaldehyde liquid (one of 3 chemicals found in product labelled Diskol) See <i>formaldehyde gas</i> below.	Danger, Class I (as concentrated product)	Strong irritant. May cause skin, eye, lungs, and mucous membrane burns. Known human carcinogen.	Slightly toxic to zooplankton. Not acutely toxic to other aquatic species.	For people who mix the product with water, wear rubber gloves, goggles, mask, and protective clothing. Avoid breathing the dust.

Soap	Caution, Class III	Ingestion may lead to stomach ache, nausea.	Moderately toxic to fish.	
Sodium dodecylbenzene sulfonate (common detergent ingredient)	Danger, Class I (as concentrated product)	Mild irritant. May cause cough, sore throat upon inhalation; skin & eye redness; diarrhea & vomiting if ingested.	Highly toxic to nematodes & flatworms. Moderately toxic to fish, slightly toxic crustaceans, worms.	Mixers should wear rubber gloves, goggles, mask, and protective clothing. Use care around aquatic environments.
Sodium hypochlorite	Danger, Class I (as concentrated product)	Irritant. May cause cough, skin & eye redness and pain. Ingestion may cause abdominal pain, sore throat, diarrhea, nausea, vomiting.	Highly toxic to fish & insects. Moderately toxic to worms, mollusks & crustaceans.	Mixers should wear rubber gloves, goggles, mask, and protective clothing. Use extreme care around aquatic environments.
Calcium hypochlorite	Danger, Class I (as concentrated product)	Slight irritant. Mildly corrosive to eyes, mucous membranes.	Highly toxic to fish, crustaceans, & mollusks.	Mixers should wear rubber gloves, goggles, mask, and protective clothing. Use extreme care around aquatic environments.
Virkon, Virkon S (which contain mostly potassium peroxymono-sulfate)	Danger, Class I (as concentrated product)	Strong irritant. May cause skin, eye, lungs, and mucous membrane burns.	Harmful to aquatic environments.	Mixers should wear rubber gloves, goggles, mask, and protective clothing. Avoid breathing the dust. Do not allow powder to enter waterways.

Sodium hydroxide	Classes I, II, & III. Danger, Warning, & Caution based on concentration	Strong corrosive. May cause skin, eye, lungs, and mucous membrane burns & blisters.	Not acutely toxic to most aquatic organisms.	Mixers should wear rubber gloves, goggles, mask, and protective clothing. Avoid breathing the dust.
Sodium carbonate	Classes I, II, & III. Danger, Warning, & Caution based on concentration	Slight irritant. May cause irritation to skin, eye, lungs, and mucous membranes.	Not acutely toxic to most aquatic organisms.	Use safety precautions & equipment when mixing concentrated product with water.
Citric acid	Classes I, II, & III. Danger, Warning, & Caution based on concentration	Irritant. May cause irritation to skin, eye, lungs, and mucous membranes.	Not acutely toxic to most aquatic organisms.	Use safety precautions & equipment when mixing concentrated product with water.
Hydrochloric acid Not for general use.	Danger, Class I (as concentrated product)	Very strong corrosive. Will cause serious acid burns and damage to skin, eyes, lungs, and mucous membrane.	Not acutely toxic to most aquatic life due to rapid dilution upon entry to water.	Not for general use. Use only by well trained & protected individuals. Use rubber gloves, goggles or face shield, respirator cartridge mask, boots, and full overalls.
Formaldehyde gas Not for general use.	Danger, Class I (as concentrated product)	Very strong corrosive. May cause skin, eye, lungs, and mucous membrane burns. Known human carcinogen.	Not acutely toxic to most aquatic life.	Not for general use. Use only by well trained & protected individuals. Use rubber gloves, goggles or face shield, respirator cartridge mask,

				boots, and full overalls.
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Note that most disinfectants are inorganic compounds that are only very toxic in the concentrated form in which they are sold. The critical factor is concentration. Most are irritants and corrosives and can harm people, equipment and environment in their most concentrated forms. Once the purchased products are diluted with water, their toxicity decreases measurably so as to not pose a great acute risk to the health of users and others who come into contact with the diluents (with the possible exceptions of formaldehyde gas and hydrochloric acid). Note also that most have few long-term or chronic effects (except formaldehyde which is a known carcinogen). Most should be used with care around open water as they may kill aquatic organisms.

Soaps and detergents, in most cases, are the most effective and least toxic alternatives readily available. **Conversely, USAID will not approve the use of highly dangerous or cancer causing alternatives such as hydrochloric acid, formaldehyde liquid or formaldehyde gas.** Untrained people should not attempt to use these products.

Expert field guidance will be needed in each country to research the acute and long-term risks of each available chemical or product. One very good source for finding risk data on individual chemicals, as well as products, is: <http://www.pesticideinfo.org/Index.html>, either 'Chemical Search' or 'Product Search'. Important issues will be worker exposure route (oral, skin, eyes, inhalation), time exposed, and dose. Except for soaps, detergents and citric acid, request rapid approval from the AFR BEO.

Pesticide procedures element f: Effectiveness of the requested pesticide for the proposed use:

As noted above, both EPA and FAO have lists of chemicals and products that work against AI. Expert field opinion will be required to determine what is most effective for a given country situation and local conditions. A local IEE should capture this information.

Pesticide procedures element g: Compatibility of the proposed pesticide use with target and non-target ecosystems:

None of the compounds on the FAO list of recommended chemicals and products are persistent; in the environment they are likely to rapidly break down. None of the disinfectants are likely to be sprayed over large areas like insecticides might, and are therefore likely to be locally contained. The end result or benefits of eradicating the virus and saving wild birds by using disinfectants to contain transmission are likely to outweigh the risks to wild birds.

The product label should also provide information on the impact of the disinfectant on target and non-target organisms, as well as provide use restrictions and cautions.

Pesticide procedures element h: Conditions under which the pesticide is to be used, including climate, flora, fauna, geography, hydrology, and soils:

There is little likelihood that disinfectants will spread far from the place where they are used because of the small quantities used and the fact that disinfectants rapidly break down and are diluted in the environment. Application of disinfectants is likely to be limited to indoor or limited-size outdoor settings.

Pesticide procedures element i: Availability of other pesticides or non-chemical control methods:

As noted above, both FAO and EPA have lists of several non-disinfectant options available, and they include relatively safe compounds as soaps, detergents and citric acid. Below is a table from the Australian Government Decontamination Procedures Manual: http://www.animalhealthaustralia.com.au/shadomx/apps/fms/fmsdownload.cfm?file_uuid=2B50B4BD-E62D-ECF1-C6AB-FA21B96A0ED7&siteName=aahc, which has been adopted by FAO on their AI site.

Items and procedures			
	Item	Disinfectant/chemical/procedure	
	Dead birds/Carcases	Bury or burn	
	Animal housing/equipment/cages	1, 2a, 2b, 2c, 3	
	Humans	1	
	Electrical equipment	5c	
	Water tanks	Drain to pasture if possible	
	Ponds used by poultry/ducks	Drain to pasture if possible	
	Feed	Bury	
	Effluent, manure	Bury or burn, 4, 3	
	Human housing	1, 2a, 2b, 2c	
	Machinery, vehicles	1,3	
	Clothing	1,2a,2b,2c,3	
	Aircraft	1,2c	
	Key	Form and final concentration	Contact time and notes
	1. Soaps and detergents		Leave in contact 10 minutes
	2. Oxidising agents		
	2a. Sodium hypochlorite		

Comment [tr1]: I think this table would look better in a slightly smaller font and left top vs left center.

		Liquid, dilute to final 2-3% available chlorine	Not good for organic materials. 10-30 minutes contact.
2b. Calcium hypochlorite		Solid or powder , dilute 2-3% available chlorine (20 g/litre powder, 30g/l solid)	Not good for organic materials. 10-30 minutes contact.
2c. Virkon [®]		2% (20 g/litre)	10 minutes. Excellent disinfectant
3. Alkalis			
3a. Sodium hydroxide (caustic soda)(NaOH). Do not use with aluminium and like alloys		2% (= 20 g/litre)	10 mins. Do not use in presence of aluminium
3b. Sodium carbonate anhydrous (washing soda) (Na ₂ CO ₃ . 10 H ₂ O)		4% (=40 g/litre) from powder 100 g/l from crystals	10 mins. Recommended for use in presence of organic materials as above. 30 mins
4. Acids			
4a. Hydrochloric		2% (20 ml/litre)	Corrosive, use only when better not available.
4b. Citric		0.2% (2 g/l)	30 mins, safe for clothes and body decontamination
5c. Formaldehyde gas		Special generation required	15-24 hrs. Toxic, only if others cannot be used.

Pesticide procedures element j: Host country's ability to regulate or control the distribution, storage, use, and disposal of the requested pesticide.

AI response activities in Africa are likely to be conducted as a partnership between the host country government and multiple donors, intergovernmental agencies and non-governmental organizations. Africa Bureau operating units should describe the nature of those operations and should discuss, in that context, how the use, distribution, storage, use and disposal of disinfectants will occur. The host country's ability and role should be a part of that description and discussion.

Pesticide procedures element k: Provision for training of users and applicators.

Africa Bureau support for disinfectants should be accompanied by assurance that adequate safe use training is provided on handling, use and disposal of disinfectants. This should likely be included as a component in broader training on AI management.

Pesticide procedures element l: Provision made for monitoring the use and effectiveness of this pesticide.

Monitoring of the use and effectiveness of disinfectants should be built into the monitoring and evaluation procedures for the overall AI response supported by USAID/AFR programs. This operation will be guided by field-based experts. Local field staff will need to look for human health and environmental issues related to disinfectant use.

Additional Conditions:

1. Children are not to be permitted to have access or exposure to the undiluted disinfectant products. Disinfectants should be stored under lock and key.
2. Produce simple safe disinfectant use training materials, quick reference guides, posters and flyers.
3. Procure simple protective clothing (gloves, masks or organic chemical respirators where toxic gasses are produced, boots, etc.) for ministry staff and others that mix and apply disinfectants.
4. As additional disinfectant choices become available, regularly update the list of registered products and evaluate them following the [12 Pesticide Procedures](#) (a. through l.) found in Regulation 216.3.
5. Have AI action-implementing partners put the conditions above into action plan matrices with timelines, assignment of roles/responsibility, deadlines, and sign-off by Chief of Party or responsible authority. The plan with completed actions and signed is sent to USAID to show compliance (this essentially becomes part of monitoring).

Discussion and Information Resources:

The risk of the impact of disinfectants on health and the environment can be significantly reduced if the above conditions are met. Disinfectants are considered pesticides and as such must meet the requirements of Regulation 216.3 b. Pesticide Procedures.

The above conditions should be part of most if not all AI treatment programs using disinfectants. Additional conditions can be written into individual country-specific IEEs as appropriate.

See http://www.epa.gov/pesticides/factsheets/avian_flu_products.htm to find a list of 100 disinfectants currently registered by EPA for use in treating Avian Influenza A virus in the USA. Since this is a different strain of AI than the H5N1 strain, USAID missions would invoke the “or similar use” proviso.

To search for the registration and risk data for individual disinfectant products and chemicals in the disinfectants, see <http://www.pesticideinfo.org/Index.html>.

See http://www.encapafrika.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch13-SaferPesticideUse.pdf to understand pesticide safety issues in Africa.

See http://www.encapafrika.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch12-IntegPestMngmt.pdf for ideas in developing an integrated pest management program that reduces pesticide use in Africa.

3.3 Animal and human vaccination, veterinary examination and treatment, and human patient examination and treatment.

The environmental concern with this set of activities is the potential for infection and disease spread through exposure to medical and veterinary waste generated through these activities.

Transmission of disease through infectious waste is the greatest and most immediate threat from healthcare and veterinary waste. Human healthcare and veterinary waste is dangerous and risks from exposure to AI virus are highly hazardous. If handled, treated, or disposed of incorrectly it can spread disease and potentially poison people, livestock, wild animals, plants and ecosystems. People who come in direct contact with the waste are at greatest risk. Examples include healthcare and veterinary workers, cleaning staff, patients, visitors, waste collectors, disposal site staff, waste pickers, drug addicts and those who knowingly or unknowingly use “recycled” contaminated syringes and needles.

Medical and veterinary waste as defined by this PIEE includes (but is not limited to): disposable gloves, disposable masks and safety clothing, ELISA test kits, antigen kits, other diagnostic kits and diagnostic reagents, infection prevention materials, vaccines, pharmaceuticals, needles, scalpels and other metal laboratory equipment, plastics like bags, containers and syringe vials. Special precautions need to be taken if plastics are to be burned as they release very carcinogenic chemicals like furans. Needles, scalpels and other sharp objects present additional risks beyond transmission of AI and require special attention.

Diseased patients will come into contact with health care providers, presenting opportunities for the virus to reenter the field on the health care workers, on their clothes, and through the disposal of medical waste and for the virus to mutate and become transmissible among humans. Health care workers can reduce their risk of exposure to the virus by taking basic protective measures, such as use of safety equipment and proper hygiene measures.

Currently, little or no management of healthcare wastes typically occurs in small-scale facilities in Africa. Training and supplies are minimal. Common practice in urban areas is to dispose of healthcare waste along with the general solid waste or, in peri-urban and rural areas, to bury waste, without treatment, in an unlined pit. In some cities small hospitals and veterinary clinics may incinerate waste in dedicated on-site incinerators, but often they fail to operate them properly. Unwanted pharmaceuticals and chemicals may be dumped into the local sanitation outlet, be it a sewage system, septic tank or latrine.

Many Africans may not have access to optimal safety equipment, safety procedures, clean water, or training on dealing with AI-infected people and wastes. Further, at the point of a human pandemic, if it happens, safety equipment and disinfectants will need to be quickly procured in bulk and used by health care workers. Large-scale vaccination programs may also take place that produces quantities of medical waste including syringes, needles, and different types of plastics. The safe handling and disposal of these will take on additional significance during a pandemic.

Clearly, waste management plans will be needed for each country that embarks on AI management, and USAID should assist in this regard.

Threshold Decision: A **negative determination (with conditions)** is recommended per 22CFR216.3(a)(2)(iii).

Conditions for Disposing of Medical and Veterinary Waste Including Sharps and Plastics and Patient Care Hygiene:

1. Work with partners to assure, to the extent possible, that the medical facilities and operations involved have adequate procedures and capacities in place to properly handle, label, treat, store, transport and properly dispose of blood, sharps and other medical waste. The Africa Bureau's Environmental Guidelines for Small Scale Activities in Africa (EGSSAA) Chapter 8 http://www.encapafrica.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch08-Healthcare-waste.pdf contains a final section on "Questions to help guide development of a healthcare waste management program". Use this questionnaire to assess adequate partner procedures and capacities for waste disposal.
2. Produce written patient hygiene, and waste management and disposal plans with clear responsibilities, written internal rules, and follow the plan.
3. Perform short-term safety training on patient care hygiene, handling and proper disposal options for medical and veterinary waste (can and likely should be included as a component in overall training on AI management).
4. Children are not to be permitted to have access or exposure to the medical and veterinary waste. Before disposal, waste should be stored under lock and key.
5. Produce simple safe hygiene and waste disposal training materials, quick reference guides, posters and flyers.
6. Procure simple protective clothing (gloves, masks, clothing, boots, etc.) for ministry staff and others that have contact with patients and handle and dispose of medical and veterinary waste.
7. Highly hazardous healthcare wastes including sharps, highly infectious non-sharp waste, large quantities of expired or unwanted pharmaceuticals, feces from AI infected birds and patients, and AI-infected bird byproducts and bodily fluids of AI patients should be destroyed and buried on-site away from water sources and bodies of water.
8. Practice good hygiene principles and vaccinate workers as feasible.
9. Minimize waste by reusing and recycle materials as appropriate, and sort and separate waste by risk and how it should be treated and disposed of. *The most important function*

of treatment is disinfection. It is the high concentration of infectious agents that makes infectious waste dangerous.

10. Have AI action-implementing partners put the conditions above into action plan matrices with timelines, assignment of roles/responsibility, deadlines, and sign-off by Chief of Party or responsible authority. The plan with completed actions and signed is sent to USAID to show compliance (this essentially becomes part of monitoring).

Discussion and Information Resources:

The risk of the impact of medical and veterinary waste on health and the environment can be significantly reduced if the following conditions are met. The following conditions should be part of most if not all AI treatment programs producing medical and veterinary waste. Additional conditions can be written into individual country-specific IEEs as appropriate.

USAID should work with its partners to ensure that a medical waste management and disposal plan is in place and implemented which achieves destruction and burial of all waste products and includes the identification of roles, responsibilities, and a timeline for action completion (and Action Plan).

See Africa Bureau's EGSSAA Chapter 8 on Health Care Waste (cited above). This chapter contains guidance which should inform the Team's activities to promote proper handling and disposal of medical waste, particularly in the section titled, "Minimum elements of a complete waste management program." The program is also encouraged to make use of the attached "Minimal Program Checklist and Action Plan" for handling healthcare waste, which was adapted from the above EGSSAA chapter and which should be further adapted for use in individual USAID country programs.

See <http://www.reusablebags.com/facts.php?id=8> for dealing with plastic waste, like plastic bags, containers, and the plastic syringe cylinder. If not contaminated by pathogenic waste, plastic bags for moving and containing products can be recycled or reused, as can plastic syringe cylinders.

See <http://environmentalrisk.cornell.edu/AgPlastics/> for information on dealing with and recycling agricultural plastics.

For a study on recycling plastics from medical and health care facilities, see http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12092754&dopt=Abstract. Also, plasticware that is not contaminated with human or animal blood or other potentially infectious biological material may be disposed of in sturdy cardboard boxes.

See: http://www.jhpiego.org/scripts/pubs/category_detail.asp?category_id=9 for specific infection prevention, quality assurance, waste management, including incineration related

issues of plastics, infectious materials, and other wastes in healthcare facilities with limited resources.

Other important references to consult in establishing a waste management program are “WHO’s Safe Management of Wastes from Healthcare Activities”

http://www.who.int/water_sanitation_health/medicalwaste/wastemanag/en/.

During a human pandemic, other than likely requiring the quarantine of infected people, the conditions for dealing with infected patients will be the same as those above, except with much greater urgency and greater quantities of activities, waste products, and all forms of risk to human and environmental quality. Information on the USA response to a potential pandemic is found at the following two sites: <http://www.cdc.gov/flu/avian> and <http://www.pandemicflu.gov/>. The proper use of safety equipment, good hygiene, disinfectants and vaccines will likely reduce the spread of a pandemic outbreak of AI H5N1.

The above conditions should be part of most if not all AI treatment programs generating medical and veterinary waste. Additional conditions can be written into individual country-specific IEEs as appropriate.

3.4 Culling of diseased livestock, and disposal of diseased livestock, wild birds, and their manure.

The environmental concern with this type of activity is the potential for AI transmission through exposure to diseased livestock, wild birds and their manure and surroundings.

Poultry manure is a primary source of transmission of AI among birds. Avian Influenza virus from waterfowl can remain viable in feces and water for up to 32 days. AI can spread through fecal-contaminated materials such as bird cages, pallets, eggs, manure and feedstuffs, and from people going from farm to farm without appropriate cleaning and disinfection procedures. Infected dead birds are another source and reservoir of AI transmission and infection potential, as are eggs and other bird byproducts. Biosecurity of commercial poultry flocks is essential in preventing outbreaks and spread of AI.

Wild endemic and migratory fowl will become infected, potentially decimating populations of non-target and, in some cases, endangered wild bird species. There is an environmental imperative to reducing transmission opportunities to wildlife through domestic poultry carcass, manure and byproduct management.

In disease outbreaks, large numbers of poultry may need to be killed for control, containment or eradication purposes. Infected poultry should preferably be slaughtered on the affected farm, as close as possible to where they are housed to reduce exposure from handling and transport. Methods for killing large numbers of poultry in commercial operations include dangerous alternatives such as gassing with carbon dioxide (method of choice), carbon monoxide, hydrogen cyanide, nitrogen, argon, and anesthetics, as well as electrocution, and mechanical means. Use of some of these methods presents risks to

human health including death. A local IEE should recognize, anticipate, and reduce these risks. These scenarios should be incorporated into the National AI Control Strategies.

Clearly, poultry manure, diseased birds, dead wild birds, eggs, and other infected bird byproducts must be disposed of and taken out of exposure to other birds and vectors or carriers of the virus like flies and scavengers. It *can not* be left in the open or buried in open pits. It must be covered by soil away from water sources. All poultry manure, carcass and byproduct handling equipment must be disinfected.

Threshold Decision: A **negative determination (with conditions)** is recommended per 22CFR216.3(a)(2)(iii).

Conditions for Dealing with Poultry Manure, Diseased Poultry, and Wild Birds:

1. Work with partners to assure, to the extent possible, that poultry manure and dead birds are properly handled, treated, stored, transported and disposed.
2. Produce a written manure and diseased bird management and disposal plan with clear responsibilities, written internal rules, and follow the plan.
3. Perform short-term safety training on handling and proper disposal options for manure and diseased birds (can and likely should be included as a component in overall training on AI management).
4. Children and the elderly are not to be permitted to have access or exposure to diseased birds, manure and body parts. Before disposal, waste should be stored securely.
5. Produce simple safe manure and diseased bird disposal training materials, quick reference guides, posters and flyers.
6. Procure simple protective clothing (gloves, masks, clothing, boots, etc.) for ministry staff and others that regularly handle and dispose of manure and diseased birds.
7. Practice good hygiene principles and vaccinate workers as feasible.
8. Regularly disinfect all manure and diseased bird handling and culling equipment.
9. Do not attempt to cull potentially infected wild bird populations as they will likely scatter and further spread AI. Take measures to reduce the trade in wildlife and wild birds.
10. Have AI action-implementing partners put the conditions above into action plan matrices with timelines, assignment of roles/responsibility, deadlines, and sign-off by Chief of Party or responsible authority. The plan with completed actions and signed is sent to USAID to show compliance (this essentially becomes part of monitoring).

Discussion and Information Resources:

Properly managed, livestock production can enhance land and water quality, biodiversity, and social and economic well-being. However, when improperly managed, livestock production may cause significant economic, social and environmental damage such as by transmission of disease-causing agents to other animals and potentially humans like that occurring with AI. Livestock product processing can also have negative impacts on the environment and human health. Further, many species of wild birds, migratory and local, terrestrial and aquatic, can be infected by AI and can serve as reservoirs of and vehicles for transmission. Some species like ducks and likely other birds may carry and transmit the disease, show no serious signs of infection, and may not die.

For guidelines on dealing with manure, see EGSSAA Chapter 11 on Livestock Production: http://www.encapafrika.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch11-Livestock.pdf.

See http://www.oie.int/eng/AVIAN_INFLUENZA/home.htm (the web site of the World Organization for Animal Health) for best practices in dealing with AI issues, including: Methods of humane killing for disease control purposes and carcass disposal.

See http://www.frameweb.org/ev.php?ID=13653_201&ID2=DO_TOPIC to understand the conservation and biodiversity community's response to AI in Africa.

The SO team shall work with implementing partners to assure that the livestock production activities are designed and implemented in such a way as to avoid potential harmful impacts as much as possible. The above EGSSAA Livestock chapter's table titled, *Mitigation and Monitoring Issues Environmental Mitigation and Monitoring Issues for Livestock Projects* shall be used as guides in the design. Implementing partners should monitor for and report on adverse impacts, particularly land and habitat degradation.

The above conditions should be part of most if not all AI treatment programs dealing with or advising on disposal of poultry manure and sick or dead birds. Additional conditions can be written into individual country-specific IEEs as appropriate.

3.5. Provision and training in the use of personal protective equipment (PPE)

The environmental concerns regarding this type of activity is simply to assure that the equipment procured is appropriate to the application and that sufficient equipment is procured to support the anticipated activities.

Personal Safety Equipment

People who use safety equipment (masks, gloves, boots, etc.) when handling diseased or dead birds, manure, byproducts, infected patients, body fluids, and disinfectants greatly reduce their risks of transferring or contracting AI and being directly harmed by disinfectants.

Unfortunately, most Africans do not use safety equipment for reasons of knowledge, cost, inconvenience or comfort, thus increasing their risks. Provision of safety equipment and training on the necessity and use of such equipment will reduce the rate of non-compliance and risk. Missions will need to plan and implement programs to provide, train, monitor and properly dispose of safety equipment. AFR's Health Program plans to donate safety equipment, and missions can augment this process by planning and determining the areas of greatest need.

Threshold Decision: A **negative determination (with conditions)** is recommended per 22CFR216.3(a)(2)(iii).

Conditions:

1. Provide training on the proper use and disposal of safety equipment.
2. Ensure a reasonably high level of quality for the equipment procured.
3. Use care to procure the type of equipment specially required for the type of disinfectants to be used, the viral load and transmission routes, and the risks to be encountered.
4. Ensure that donations of disinfectants are accompanied by safety equipment.

Discussion and Information Resources:

The proper use of safety equipment can greatly reduce risk of harm to human health from chemicals used to combat the disease, to exposure to the virus, and to domestic poultry health from disease transmission. The Bureau for Africa EGSSAA web reference http://www.encapafrica.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch13-SaferPesticideUse.pdf provides a table that matches types of chemicals (basically liquid, solid or gas) and the special types of safety equipment needed for each.

The above conditions should be part of most, if not all, AI treatment programs using or advising on use of personal safety equipment. Additional conditions can be written into individual country-specific IEEs, as appropriate.

Training

Training courses provide an avenue for teaching skills to health, veterinary and agricultural technical staff involved in dealing with the AI outbreaks. For USAID, Regulation 216 requires that such training include not only human safety but environmental issues as well. The training can be short and use the train the trainer

methodology, turning those trained into topic experts and reinforcing what they have learned.

Such training can include the following topics:

- Description of the disease and symptom recognition;
- Regulatory and quarantine issues;
- Surveillance; zoning and compartmentalization;
- Proper use of personal safety equipment,
- Proper handling, use and disposal of disinfectants;
- Proper handling, use and disposal of medical and veterinary waste;
- Environmental issues and protection;
- Proper disposal of poultry manure and bird parts;
- Vaccines and diagnostic methods;
- Methods of humane killing for disease control purposes and carcass disposal;
- Food safety;
- Planning and record keeping; and
- Safety of animal products in international trade.
- Incineration as a disposal method for waste, special treatment of plastics, and sharps
- Dealing with wild birds and wild bird die-off

3.6 Communication, public awareness campaigns and training in avian influenza response.

One of the cheapest methods for disseminating public messages on AI management campaign risk reduction is through internet, radio and television outlets, and use of posters, billboards and informational flyers. These are methods for informing or ‘training’ a large number of people in a very short timeframe and can increase public awareness of the importance of animal quarantine issues and household egg and meat management, handling, and cooking requirements. These methods should be supported by and integrated into USAID’s response in each affected country. AFR’s Health Program plans to invest in communication technologies and methodologies to raise awareness and reduce risks. Missions can augment this process by planning and determining the areas of greatest need.

Threshold Decision: This category of activities is recommended for a **categorical exclusion from environmental examination**, per 22CFR216.2(c)(2)(i) [education, technical assistance, training].

3.7 Monitoring and Evaluation

As required by ADS 204.5.4, the SO team will actively monitor ongoing activities for compliance with approved IEE recommendations, and modify or end activities that are not in compliance. If additional activities that are not described in this document are added to this program, an amended environmental examination must be prepared.

Basic mitigation is covered above by the conditions under each negative determination, and one level of monitoring can be achieved by collecting the completed, signed-off on by Chief of Party action plans from implementing partners.

A country-specific IEE should include a short description of how the SO Team intends to conduct monitoring, ensure compliance, and report on status. Some examples, which the SO Team can build upon include:

- * Implementing partners' annual reports and, as appropriate, progress reports shall contain a brief update on mitigation and monitoring measures being implemented, results of environmental monitoring, and any other major modifications/revisions in the development activities, and mitigation and monitoring procedures.

- * USAID/(Country) will report to the REO and the BEO on an annual basis on the status of environmental screening and review and the implementation of mitigation and monitoring requirements. This report should draw upon implementing partners' progress and annual reports, as well as on periodic site visits by the MEO and REO.

- * USAID/(Country) is responsible for monitoring and evaluation of activities after implementation with respect to environmental effects. A process will be integrated into the SO's pertinent Performance Monitoring and Evaluation Plan which will involve periodic field visits.

- * USAID/(Country) is responsible for assuring that implementing partners have the human capacity necessary to incorporate environmental considerations into program planning and implementation and to take on their role in the Environmental Screening Process. Implementing partners should seek training as needed, such as through participation in the Africa Bureau's regional ENCAP training courses.

Glossary

AFR	Bureau for Africa, USAID
AI	Avian Influenza
BEO	Bureau Environmental Officer, USAID
CFR	Code of Federal Regulations
CS	Country Strategy
EGSSAA	USAID/Africa's Environmental Guidelines for Small Scale Activities in Africa
ELISA	Enzyme-Linked Immunosorbent Assay
EPA	U.S Environmental Protection Agency
EPP	Environmentally Preferable Purchasing
FAO	U.N. Food and Agriculture Organization
GC	General Counsel, USAID
GIS	Geographic Information Systems
H5N1	Hemagglutinin 5, Neuraminidase 1 (strain of AI virus)
IEE	Initial Environmental Examination
NGO	Non-Governmental Organization
M&S	Monitoring and Surveillance
OIE	World Organization for Animal Health (Office International des Epizooties)
PCR	Patient Care Reports
PEA	Programmatic Environmental Assessment
PIEE	Programmatic Initial Environmental Examination
PVO	Private Voluntary Organization
REA	Rapid Environmental impact Assessment
REDSO	Regional Economic Development Support Office, USAID
RCSA	Regional Center for Southern Africa, USAID
SD	Office of Sustainable Development, AFR
SO	Strategic Objective
USAID	U.S. Agency for International Development
WARP	West Africa Regional Program, USAID
WHO	U.N. World Health Organization

References

OIE Avian Influenza web site http://www.oie.int/eng/AVIAN_INFLUENZA/home.htm

Guidelines for the Surveillance of Avian Influenza

[Current Appendix 3.8.9. of the OIE Terrestrial Animal Health Code](#) - 2005

Guidelines for slaughter of poultry for disease control purposes

J.W. Galvin - [Discussion paper](#)

Interim Guidelines on protection of farmers and slaughterhouses workers (WHO) - WHO Regional office for the Western Pacific, Manila, 26 January 2004 [File pdf](#)

FAO Avian Influenza web site

http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/special_avian.html

[Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza \(HPAI\)](#)

Guiding Principles for Highly Pathogenic Avian Influenza Surveillance and Diagnostic Networks in Asia

USAID Avian Influenza Response

http://www.usaid.gov/our_work/global_health/home/News/news_items/avian_influenza.html and

<http://ghintranet.usaid.gov/aiunit/> and

http://inside.usaid.gov/EE/avian_influenza/

[World Health Organization \(WHO\) Avian Influenza: Assessing the Pandemic Threat - January 2005](#) [PDF, 2.5MB]

See http://www.encapafrica.org/EPTM/AnnexF-AFR_EPTM_Mar2005b.pdf for PEA details. A PIEE is justified as the present perceived risk does not rise to the level justified for a PEA.

Office International des Epizooties (OIE) and Food and Agriculture Organization (FAO) Guidelines. See http://www.oie.int/eng/AVIAN_INFLUENZA/home.htm and http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/special_avian.html

USAID Health's response to AI is found at the following web address:

http://www.usaid.gov/our_work/global_health/home/News/news_items/avian_influenza.html. See <http://www.irinnews.org/Avianflu.asp> for a list of African countries and what

each is doing to prepare itself against/for outbreak.

An up-to-date succinct listing of policies from each African country for preparing themselves to exclude, detect, contain and deal with AI can be found at this United Nations web address: <http://www.irinnews.org/Avianflu.asp>.

Many species of migratory birds coming to Africa from Europe, the Middle East and Asia are thought to be susceptible. See http://www.birdlife.org/action/science/species/avian_flu/ for a statement on AI.

See http://www.epa.gov/pesticides/factsheets/avian_flu_products.htm to find a list of 100 disinfectants currently registered by EPA for use in treating Avian Influenza A virus in the USA.

See http://www.epa.gov/pesticides/factsheets/avian_flu_products.htm to find a list of 100 disinfectants currently registered by EPA for use in treating Avian Influenza A virus in the USA. Since this is a different strain of AI than the H5N1 strain, USAID missions would invoke the “or similar use” proviso.

To search for the registration and risk data for individual disinfectant products and chemicals in the disinfectants, see <http://www.pesticideinfo.org/Index.html>.

See http://www.encapafrica.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch13-SaferPesticideUse.pdf to understand pesticide safety issues in Africa well.

See http://www.encapafrica.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch12-IntegPestMngmt.pdf for ideas in developing an integrated pest management program that reduces pesticide use in Africa.

See http://www.encapafrica.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch08-Healthcare-waste.pdf which is Chapter 8 on Health Care Waste of USAID Bureau for Africa’s Environmental Guidelines for Small Scale Activities in Africa (EGSSAA).

See <http://www.reusablebags.com/facts.php?id=8> for dealing with plastic waste, like plastic bags, containers, and the plastic syringe cylinder. If not contaminated by pathogenic waste, plastic bags for moving and containing products can be recycled or reused, as can plastic syringe cylinders.

See <http://environmentalrisk.cornell.edu/AgPlastics/> for information on dealing with and recycling agricultural plastics.

For a study on recycling plastics from medical and health care facilities, see http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12092754&dopt=Abstract. Also, plasticware that is not contaminated with human or animal blood or other potentially infectious biological material may be disposed of in sturdy cardboard boxes.

See: http://www.jhpiego.org/scripts/pubs/category_detail.asp?category_id=9 for specific infection prevention, quality assurance, waste management, including incineration related

issues of plastics, infectious materials, and other wastes in healthcare facilities with limited resources,

Other important references to consult in establishing a waste management program are “WHO’s Safe Management of Wastes from Healthcare Activities”

http://www.who.int/water_sanitation_health/medicalwaste/wastemanag/en/.

For guidelines on dealing with manure, see EGSSAA Chapter 11 on Livestock

Production: http://www.encapafrika.org/EGSSAA/current_EGSSAA_sections/EGSSAA-Pt2Ch11-Livestock.pdf.

See http://www.oie.int/eng/AVIAN_INFLUENZA/home.htm (the web site of the World Organization for Animal Health) for best practices in dealing with AI issues, including: Methods of humane killing for disease control purposes and carcass disposal.

See http://www.frameweb.org/ev.php?ID=13653_201&ID2=DO_TOPIC to understand the conservation and biodiversity community’s response to AI in Africa.

Information on the USA response to a potential pandemic is found at the following two sites: <http://www.cdc.gov/flu/avian/> and <http://www.pandemicflu.gov/>.

New initiatives are underway to reduce negative environmental impacts that arise from or exacerbate disasters. Several groups are currently focusing on this issue. They include Relief Web at <http://www.reliefweb.int/rw/lib.nsf/db900SID/DPAL-5ZAHW2?OpenDocument>, the REA Centre at http://www.benfieldhrc.org/disaster_studies/rea/rea_index.htm, among others.